



8e Initial

8EHQ-1193-1270

American Cyanamid Company
One Cyanamid Plaza
Wayne, NJ 07470

Contains No CBI

H. Michael D. Utidjian, M.D.
Corporate Medical Director

November 3, 1993

Document Processing Center (TS-790)
ATTN: SECTION 8(E) COORDINATOR
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460



8EHQ-93-12747
INIT 11/04/93



88940000033

Dear Sir/Madam:

The purpose of this letter is to inform you under Section 8(e) of TSCA of the study "Daphnia, Acute Immobilization Test" on a commercial cationic polymer mixture. The mixture has the following composition:

CAS#	Chemical Name	%
007732-18-5	Water	~50
042751-79-1	Dimethylamine-Epichlorhydrin-Ethylenediamine Polymer	~49

This study reports a 48-Hour Static EC₅₀ of 0.6 mg/l with a no-effect level at 96 hours of 0.2 mg/l.

EC₅₀ determinations without suspended solids overestimates the true toxicity of cationic polymers. Suspended solids and other dissolved organic materials like humic acid which are present in natural waters reduce the effective concentration of the polymer and thereby its toxicity.

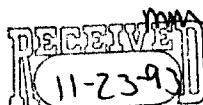
It is our understanding that the EPA is aware of the "mechanical" nature of the toxicity produced by cationic polymers and therefore, this information confirms data already known to the agency.

A final report of this study is enclosed. This document does not contain confidential business information.

Please direct all communications on this subject to Patricia Ann Vernon, Associate Toxicologist at the above address or call her at (201) 357-3375.

Sincerely,

H. M. Utidjian, M.D.
H. Michael D. Utidjian, M.D.
Corporate Medical Director



28 pgs.

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OCT 14 1993

P. A. HARRIS

EXXON BIOMEDICAL SCIENCES, INC.

PROJECT NUMBER: 144442

DAPHNIA ACUTE IMMOBILIZATION TEST

TEST MATERIAL: MRD-92-444
(CT-519-920)

PERFORMED AT:

EXXON BIOMEDICAL SCIENCES, INC.
ENVIRONMENTAL TOXICOLOGY LABORATORY
METTLERS RD. CN 2350
EAST MILLSTONE, NEW JERSEY 08875-2350

COMPLETION DATE: OCTOBER 13, 1993

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APPROVAL SIGNATURES

M. E. Targia

M. E. Targia, B.A.
Study Director
Environmental Toxicology Laboratory

13 Oct 93

DATE

D. H. Wasserstrom

D. H. Wasserstrom, M.E.
Director of Environmental Toxicology

8 OCT 1993

DATE

L. D. Twitty

L. D. Twitty, A.S.
Analytical and Fate Chemistry Supervisor

12/0ct/93

DATE

I hereby declare to the best of my knowledge, this study was conducted in accordance with the OECD Principles of Good Laboratory Practice set forth in C(81)30 (Final), Annex 2 with the exceptions listed in the Guideline / Regulation Deviations section of this document.

M. E. Targia

M. E. Targia, B.A.
Study Director
Environmental Toxicology Laboratory

13 Oct 93

DATE

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QUALITY ASSURANCE STATEMENT

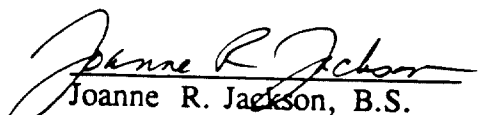
STUDY NUMBER: 144442

TEST SUBSTANCE/ARTICLE: MRD-92-444

STUDY SPONSOR: Cytec Industries

Listed below are the dates that this study was inspected by the Quality Assurance Unit of Exxon Biomedical Sciences, Inc., and the dates findings were reported to the Study Director and Management.

<u>Date(s) of Inspection</u>	<u>Reported to Study Director</u>	<u>Reported to Management</u>
16-Mar-93	16-Mar-93	22, 23-Mar-93
19, 26-Mar-93	26-Mar-93	30-Mar-93
14-Apr-93	15-Apr-93	19, 21-Apr-93
16-Apr-93	19-Apr-93	23-Apr-93
17-May-93	17-May-93	01, 07-Jun-93


 Joanne R. Jackson, B.S.
 Quality Assurance Supervisor

17 Jun 93
 Date

SUMMARY

An acute immobilization test was performed to evaluate the toxicity of the test material MRD-92-444 (CT-519-920) to *Daphnia magna*. Due to an excessive number of control organisms (>10%) trapped at the surface and/or immobilized in the first four trials, a fifth trial was performed. The results of the fifth test are presented.

Preliminary methods development indicated that mixing the test material in dilution water for 1 hour was most appropriate for this study.

A stock solution was prepared by adding the appropriate amount of neat test material to dilution water in a glass aspirator bottle. The stock solution was mixed (<10% vortex) on a magnetic stirplate with a Teflon® coated stirbar for 1 hour. The nominal treatment levels for the test were 5mg/L, 1mg/L, 0.2mg/L, 0.04mg/L, 0.008mg/L, 0.0016mg/L and a laboratory dilution water control (BW2). Test treatments were prepared by adding the appropriate amount of stock solution to laboratory dilution water. Samples were removed from each treatment and analyzed for carbon content. The daphnids were exposed to each treatment level for a 48-hour period.

Due to the low percentage of carbon in this material (20.86%) and the variability of the analytical method at the loading levels tested, measured concentrations could not be determined. As such (and since the test material is soluble), nominal concentrations were used for the statistical analysis.

The 48-hour EC50 was calculated to be 0.6mg/L with 99% confidence intervals of 0.2 to 1.0mg/L based on the nominal concentration of the test material. The Effect Concentration (EC50) is the calculated concentration of test material that causes 50% immobilization in a population of test organisms within a specified exposure period.

INTRODUCTION

This study was conducted for Cytec Industries, 5 Garret Mountain Plaza, West Paterson, NJ 07424 to evaluate the acute toxicity of the test material MRD-92-444 (CT-519-920) to the daphnid, *Daphnia magna*.

This test was conducted in general agreement with OECD¹ guidelines, and was performed to comply with OECD GLP regulations².

The study was performed by the Environmental Toxicology Laboratory of Exxon Biomedical Sciences, Inc., Mettlers Road, CN 2350, East Millstone, NJ 08875-2350. The Environmental Toxicology Laboratory is certified by the New Jersey Department of Environmental Protection and Energy for Acute Bioassay Testing.

¹*Daphnia sp. Acute Immobilization Test*. OECD Guidelines for Testing of Chemicals. Section 2: Effects on Biotic Systems, Guideline 202, adopted 4-Apr-84.

²*OECD Principles of Good Laboratory Practice*, C(81)30 (Final), Annex 2.

MATERIALS AND METHODS

Study Initiation Date

25-Feb-93

In-life Test Period

16-Apr-93 to 18-Apr-93

Experimental Termination

18-Apr-93

Test Material Identification

MRD-92-444 (CT-519-920)

Description

Amber liquid

Storage Conditions

Room temperature

Vehicle

None

Justification of Dosing Route

Potential environmental exposure is by the test material in water.

Carrier / Dilution Water

Laboratory Dilution Water, Blend Water 2 (BW2). The dilution water is aerated by circulation within the holding tank and aged ≥ 24 hours before introduction to the test system.

Characterization of Test Material

The identity (including batch number and composition, purity and concentrations, where appropriate, or other characterizations to appropriately identify each batch of the test substance) and the stability are the responsibility of the Sponsor.

Analysis of Mixtures

Samples were removed from each treatment on Day 0 and 2 and analyzed for carbon content.

The results of these analyses are included in Appendix A on page 18.

Mixture sample retention: None

Test System

Daphnia magna

Method of Species Verification

Keyed using Fresh-Water Biology, Ward, H. B. and G. C. Whipple, 1959, John Wiley and Sons, Inc.

Justification for Selection of Test System

Daphnia magna has been used in safety evaluation and is a common test species for freshwater toxicity studies.

Supplier

Cultured in the Environmental Toxicology Laboratory of Exxon Biomedical Sciences, Inc.

Husbandry and Acclimation

Daphnids are kept in 1 liter glass culture vessels with dilution water (BW2 at $20 \pm 2^\circ\text{C}$) similar in characteristics to that used during the test.

Cultures of *Daphnia* are fed $\sim 3.12 \times 10^5$ cells/mL per day of *Selenastrum capricornutum* and $\sim 6\mu\text{L/mL}$ of a yeast / salmon starter / cereal leaves mixture per day. Algae are cultured in the Environmental Toxicology Laboratory of Exxon Biomedical Sciences, Inc. using modified ASM-1 medium.

Number and Sex

Number: 140; Sex: Not Applicable

Age at Initiation of Exposure

<24 hours old, taken from 13-day old parents.

Test System Identification

Test organisms were not individually identified. All test chambers were labeled to show study number, concentration, randomization number and replicate chamber number.

Selection

Organisms were randomly distributed one at a time until each chamber contained five.

Feed

Test organisms were not fed during the study.

Contaminants

The quality of the dilution water used in culture and testing is monitored at weekly, monthly, semi-annual and annual intervals (Appendix A). There are no known contaminants in the water or the feed believed to be at levels high enough to interfere with this study.

Range Finding Test

A range finding test was performed to determine the concentrations for the definitive test. Nominal concentrations were: 1.0g/L, 0.1g/L, 0.05g/L, 0.01g/L, 0.005g/L and a control of BW2. Individual treatment solutions were prepared by adding the neat test material to dilution water. These solutions were mixed for 1 hour. The WAF of these treatment mixtures was used to prepare two replicates containing five organisms. Total immobilization was observed in the 1.0g/L treatment during at 24 hours of exposure. Total immobilization was observed at all other treatment levels (except the control) at 48 hours.

Definitive Test Design

GROUP	NOMINAL CONCENTRATION (MRD-92-444) (CT-519-92O) (mg/L)	NUMBER OF TEST ORGANISMS
1 (CONTROL)	0	20 (5 per 4 replicates)
2	0.0016	20
3	0.008	20
4	0.04	20
5	0.2	20
6	1.0	20
7	5.0	20

Preparation and Administration of Test Material

A stock solution was prepared by adding the appropriate amount of neat test material to dilution water in a glass aspirator bottle. The stock solution was mixed (< 10% vortex) on a magnetic stirplate with a Teflon® coated stirbar for 1 hour. The stock solution appeared clear. The stock solution was drawn through the outlet at the bottom of the vessel and added to dilution water to prepare the nominal treatment levels for the test. Treatments were then divided into 4 replicate chambers. Test chambers were covered with glass to minimize evaporation and/or volatilization.

Test Chamber / Volume

100mL glass beaker / 50mL

Exposure Duration

48 hours (\pm 1 hour)

Exposure Conditions

Mean test temperature: $20.1 \pm 0.1^{\circ}\text{C}$ (s.d.), continuously monitored.

Diurnal light: Dark throughout the study.

Experimental Evaluation

Observations for immobilization, abnormal behavior and appearance of the daphnids were performed on all replicate chambers at 24 and 48 hours (± 1 hr). Immobilization is the lack of swimming ability within ~15 seconds after gentle agitation of the test chambers. No evidence of test material insolubility was observed in the test chambers. Water quality measurements (pH, dissolved oxygen and temperature) were performed on Day 0 and at termination in each treatment.

After the 48-hour period, monitoring of environmental conditions was discontinued and the test organisms were discarded.

Loading During the Definitive Study

≤ 1 daphnid / 2mL of solution

Disposal

Test solutions are disposed of under the supervision of the Site Hazardous Waste Coordinator of Exxon Biomedical Sciences, Inc.

RESULTS

Due to the low percentage of carbon in this material (20.86%) and the variability of the analytical method at the loading levels tested, measured concentrations could not be determined. As such (and since the test material is soluble), nominal concentrations were used for the statistical analysis.

The 24-hour Effect Concentration (EC50) value with 95% confidence intervals was determined using the Probit procedure³ of SAS⁴ and was based upon the natural log of the of the concentration. The 48-hour EC50 value with 99% confidence intervals was determined using the Binomial Method⁵. The EC50 values are as follows:

<u>Exposure Period</u> (hours)	<u>EC50</u> (mg/L)	<u>Confidence Intervals</u> (mg/L)
24	0.8	0.2 - 2.6
48	0.6	0.2 - 1.0

The minimum concentration causing 100% immobilization was 1.0mg/L. The maximum concentration causing no immobilization was 0.2mg/L.

Treatment (mg/L)	% Immobilization	
	24 hours	48 hours
Control	0	0
0.0016	0	0
0.008	0	0
0.04	0	0
0.2	0	0
1.0	80	100
5.0	90	100

Table 1 presents the water quality values for the test. The in-life observations are presented in Table 2. Appendix A presents the analytical chemistry methods and results, and the dilution water analysis. The concentration-response curve is presented in Figure 1.

³Finney, D.J., 1971. *Probit Analysis*, Third Edition, London: Cambridge University Press.

⁴SAS User's Guide: Statistics, Version 5.18 Edition. SAS Institute, Inc., Cary, NC. 1985.

⁵Stephan, C.E., *Methods for Calculating an LC50*, Aquatic Toxicology and Hazard Evaluation, ASTM STP 634, F.L. Mayer and J.L. Hamelink, Eds., American Society for Testing and Materials, 1977, pp. 65-84.

GUIDELINE / REGULATION DEVIATIONS

It is unknown if the analysis to support the characterization of the test material was performed in a GLP compliant manner.

It cannot be confirmed that the percent carbon analysis was performed in a GLP compliant manner.

PROTOCOL DEVIATIONS

The protocol required the chambers to be 30mL beakers containing 25mL of test solution. For this study, 100mL beakers containing 50mL of test solution were used. This is believed to have had no impact on the integrity of the study.

RECORDS

All appropriate materials, methods and experimental measurements required in the protocol were recorded and documented in the raw data. Any changes, additions or revisions to the protocol were approved by the Study Director and the Sponsor Representative. These changes were documented in writing, and include the date, the signatures of the Study Director and the Sponsor Representative and the justification for the change.

A copy of the protocol, final report, raw data, computer generated listings of raw data and supporting documentation were deposited in the Archives of Exxon Biomedical Sciences, Inc.

Table 1 - Water Quality Values

Test Day: 0 Date: 16-Apr-93 Time: 1200 hrs.

Concentration (mg/L)	Control	0.0016	0.008	0.04	0.2	1.0	5.0
Dissolved Oxygen (mg/L)	8.6	8.4	8.4	8.4	8.4	8.4	8.4
pH	7.2	7.2	7.2	7.2	7.2	7.2	7.2
Temperature (°C)	20.1	20.1	20.1	20.1	20.1	20.1	20.1

Test Day: 2 Date: 18-Apr-93 Time: 1245 hrs.

Concentration (mg/L)	Control	0.0016	0.008	0.04	0.2	1.0	5.0
Dissolved Oxygen (mg/L)	9.1	9.1	9.2	9.1	9.1	9.1	9.1
pH	7.1	7.2	7.3	7.3	7.4	7.4	7.4
Temperature (°C)	20.0	19.5	19.5	19.5	19.5	19.5	19.5

Table 2 - In-Life Observations

Test Day: 1

Date: 17-Apr-93

Time: 1245 hrs.

Concentration (mg/L)	Control				0.0016				0.008				0.04			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Replicate																
Immobilization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative Immobilization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trapped at Surface	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Normal	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5
Survival	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

Concentration (mg/L)	0.2				1.0				5.0			
	1	2	3	4	1	2	3	4	1	2	3	4
Replicate												
Immobilization	0	0	0	0	3	5	4	4	4	4	5	5
Cumulative Immobilization	0	0	0	0	3	5	4	4	4	4	5	5
Lethargic	0	0	0	0	0	0	0	0	1	1	0	0
Normal	5	5	5	5	2	0	1	1	0	0	0	0
Survival	5	5	5	5	2	0	1	1	1	1	0	0

Table 2 - In-Life Observations

Test Day: 2

Date: 18-Apr-93

Time: 1220 hrs.

Concentration (mg/L)	Control				0.0016				0.008				0.04			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Replicate																
Immobilization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative Immobilization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Normal	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Survival	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

Concentration (mg/L)	0.2				1.0				5.0			
	1	2	3	4	1	2	3	4	1	2	3	4
Replicate												
Immobilization	0	0	0	0	2	0	1	1	1	1	0	0
Cumulative Immobilization	0	0	0	0	5	5	5	5	5	5	5	5
Normal	5	5	5	5	0	-	0	0	0	0	-	-
Survival	5	5	5	5	0	-	0	0	0	0	-	-

(-) No observations were performed due to total mortality in replicate.

Appendix A Analytical Results

Analytical Chemistry Results

Due to the complex nature of the test material, samples of MRD-92-444 (CT-519-920) in water were analyzed for Dissolved Organic Carbon⁶ (DOC) content. DOC results were obtained by filtering the samples through a 0.45 μ m filter and analyzing for Total Carbon (TC) and Inorganic Carbon (IC) with the difference between the two values considered DOC. Samples were analyzed using a Dohrmann DC-190 Total Organic Carbon Analyzer.

Nominal Chemical Conc. (mg/L)	DOC (ppm)	
	Day 0	Day 2
Control	2.446 \pm 0.098	2.436 \pm 0.188
0.0016	2.176 \pm 0.117	2.255 \pm 0.194
0.008	2.010 \pm 0.159	1.985 \pm 0.071
0.04	2.161 \pm 0.196	1.845 \pm 0.117
0.2	1.783 \pm 0.157	1.960 \pm 0.026
1.0	1.876 \pm 0.071	2.142 \pm 0.193
5.0	2.004 \pm 0.165	2.293 \pm 0.119

⁶American Public Health Association, American Water Works Association and Water Pollution Control Federation. 1989. *Standard Methods for the Examination of Water and Wastewater*, 17th ed. American Public Health Association, Washington, D.C. Method 5310B, Combustion-Infrared.

Dilution Water (Carrier Water) Analysis

The dilution water used by the Environmental Toxicology Laboratory is ground water from a well located at the Environmental Toxicology Laboratory in East Millstone, NJ. The well water is treated by the system depicted in Figure A-1. The water system is composed of glass and 316 stainless steel, Teflon® and contains no materials known to leach into the water. The water used during this study was a blend of carbon filtered well water and reverse osmosis dialyzed well water.

The following water quality data is most representative of the dilution water used during the in-life period of the study. Table A-1 presents analyses performed on the blended dilution water (BW2) prior to study start. Table A-2 presents the analyses of the chemical pollutant parameters of the carbon treated well water ("SV-5"), since analyses are not performed on individual blends. Water quality analyses (dissolved oxygen, pH, alkalinity, hardness and specific conductance) are performed by the Environmental Toxicology Laboratory personnel. Monthly Total Organic Carbon analysis is performed by the Analytical Chemistry Laboratory at Exxon Biomedical Sciences, Inc. All other analyses are performed by a contracted laboratory.

Table A-1

Results of Water Quality Analysis

Sample	Sample Date	Alkalinity as CaCO ₃ (mg/L) ♦	Hardness as CaCO ₃ (mg/L) ☼	Specific Conductance (μmhos)	pH	Dissolved Oxygen (mg/L)
BW2	16-Apr-93	30	100	200	7.7	8.5
BW2	22-Apr-93	31	82	200	7.6	8.7

Monthly Water Quality Analysis

Sample	Sample Date	Total Organic Carbon (ppm) ★
BW2	18-Mar-93	1.142
BW2	21-Apr-93	1.660

- ♦ U.S. Environmental Protection Agency. 1979, Revised March 1983. *Methods for Chemical Analysis of Water and Wastes*, EPA-600/4-79-020. Office of Research and Development, Cincinnati, OH. Method 310.1, Alkalinity (Titrametric, pH 4.5).
- ☼ U.S. Environmental Protection Agency. 1979, Revised March 1983. *Methods for Chemical Analysis of Water and Wastes*, EPA-600/4-79-020. Office of Research and Development, Cincinnati, OH. Method 130.2, Alkalinity (Titrametric, EDTA).
- ★ American Public Health Association, American Water Works Association and Water Pollution Control Federation. 1989. *Standard Methods for the Examination of Water and Wastewater*, 17th ed. American Public Health Association, Washington, D.C. Method 5310B, Combustion-Infrared.

Table A-2 Priority Pollutants

Semi-annual Dilution Water Analysis
Base/Neutral Compounds

Description	Unit	MDL	Sampled 27-JAN-93
			Well Water
Acenaphthene	µg/L	1.9	ND
Acenaphthylene	µg/L	3.5	ND
Anthracene	µg/L	1.9	ND
Benzidine	µg/L	44.	ND
Benzo(a)anthracene	µg/L	7.9	ND
Benzo(a)pyrene	µg/L	2.5	ND
Benzo(b)fluoranthene	µg/L	4.8	ND
Benzo(ghi)perylene	µg/L	4.1	ND
Benzo(k)fluoranthene	µg/L	2.5	ND
bis(2-Chloroethoxy)methane	µg/L	5.4	ND
bis(2-Chloroethyl)ether	µg/L	5.8	ND
bis(2-Chloroisopropyl)ether	µg/L	5.8	ND
bis(2-Ethylhexyl)phthalate	µg/L	10.	ND
4-Bromophenyl phenyl ether	µg/L	1.9	ND
Butyl benzyl phthalate	µg/L	10.	ND
2-Chloronaphthalene	µg/L	1.9	ND
4-Chlorophenyl phenyl ether	µg/L	4.2	ND
Chrysene	µg/L	2.5	ND
Dibenzo(a,h)anthracene	µg/L	2.5	ND
1,2-Dichlorobenzene	µg/L	1.9	ND
1,3-Dichlorobenzene	µg/L	1.9	ND
1,4-Dichlorobenzene	µg/L	4.4	ND
3,3'-Dichlorobenzidine	µg/L	16.7	ND
Diethyl phthalate	µg/L	10.	ND
Dimethyl phthalate	µg/L	5.1	ND
Di-n-butyl phthalate	µg/L	10.	ND
2,4-Dinitrotoluene	µg/L	5.8	ND
2,6-Dinitrotoluene	µg/L	1.9	ND
Di-n-octyl phthalate	µg/L	10.	ND
1,2-Diphenylhydrazine	µg/L	10.	ND
Fluoranthene	µg/L	2.2	ND
Fluorene	µg/L	1.9	ND
Hexachlorobenzene	µg/L	1.9	ND
Hexachlorobutadiene	µg/L	0.91	ND
Hexachlorocyclopentadiene	µg/L	10.	ND
Hexachloroethane	µg/L	1.6	ND
Indeno(1,2,3-c,d)pyrene	µg/L	3.7	ND
Isophorone	µg/L	2.2	ND
Naphthalene	µg/L	1.6	ND

MDL = Minimum Detection Limits

ND = None Detected

Table A-2 Priority Pollutants (continued)

Description	Unit	MDL	Sampled 27-JAN-93 Well Water
Nitrobenzene	µg/L	1.9	ND
N-Nitrosodimethylamine	µg/L	10.	ND
N-Nitrosodi-n-propylamine	µg/L	10.	ND
N-Nitrosodiphenylamine	µg/L	1.9	ND
Phenanthrene	µg/L	5.5	ND
Pyrene	µg/L	1.9	ND
1,2,4-Trichlorobenzene	µg/L	1.9	ND

Pesticides/PCB Compounds

Description	Unit	MDL	Sampled 27-JAN-93 Well Water
Aldrin	µg/L	0.051	ND
Alpha-BHC	µg/L	0.051	ND
Beta-BHC	µg/L	0.051	ND
Gamma-BHC	µg/L	0.051	ND
Delta-BHC	µg/L	0.051	ND
Chlordane	µg/L	1.0	ND
4,4'-DDT	µg/L	0.10	ND
4,4'-DDE	µg/L	0.10	ND
4,4'-DDD	µg/L	0.10	ND
Dieldrin	µg/L	0.10	ND
Endosulfan I	µg/L	0.051	ND
Endosulfan II	µg/L	0.10	ND
Endosulfan sulfate	µg/L	0.10	ND
Endrin	µg/L	0.10	ND
Endrin aldehyde	µg/L	0.10	ND
Heptachlor	µg/L	0.051	ND
Heptachlor epoxide	µg/L	0.051	ND
Aroclor-1242	µg/L	0.51	ND
Aroclor-1254	µg/L	1.0	ND
Aroclor-1221	µg/L	0.51	ND
Aroclor-1232	µg/L	0.51	ND
Aroclor-1248	µg/L	0.51	ND
Aroclor-1260	µg/L	1.0	ND
Aroclor-1016	µg/L	0.51	ND
Toxaphene	µg/L	2.0	ND
Endrin ketone	µg/L	0.10	ND
Methoxychlor	µg/L	0.51	ND

MDL = Minimum Detection Limits

ND = None Detected

Table A-2 Priority Pollutants (continued)

Acid Compounds

Description	Unit	MDL	Sampled 27-JAN-93 Well Water
2-Chlorophenol	µg/L	3.3	ND
2,4-Dichlorophenol	µg/L	2.7	ND
2,4-Dimethylphenol	µg/L	2.7	ND
4,6-Dinitro-o-cresol	µg/L	24.	ND
2,4-Dinitrophenol	µg/L	42.	ND
2-Nitrophenol	µg/L	3.6	ND
4-Nitrophenol	µg/L	2.4	ND
p-Chloro-m-cresol	µg/L	3.0	ND
Pentachlorophenol	µg/L	3.6	ND
Phenol	µg/L	1.5	ND
2,4,6-Trichlorophenol	µg/L	2.7	ND

Volatile Compounds

Description	Unit	MDL	Sampled 27-JAN-93 Well Water
Acrolein	µg/L	100.	ND
Acrylonitrile	µg/L	100.	ND
Benzene	µg/L	4.4	ND
bis(Chloromethyl)ether	µg/L	10.	ND
Bromoform	µg/L	4.7	ND
Carbon tetrachloride	µg/L	2.8	ND
Chlorobenzene	µg/L	6.0	ND
Chlorodibromomethane	µg/L	3.1	ND
Chloroethane	µg/L	10.	ND
2-Chloroethylvinyl ether	µg/L	10.	ND
Chloroform	µg/L	1.6	ND
Dichlorobromomethane	µg/L	2.2	ND
Dichlorodifluoromethane	µg/L	10.	ND
1,1-Dichloroethane	µg/L	4.7	ND
1,2-Dichloroethane	µg/L	2.8	ND
1,1-Dichloroethylene	µg/L	2.8	ND
1,2-Dichloropropane	µg/L	6.0	ND
cis-1,3-Dichloropropylene	µg/L	5.0	ND
Ethylbenzene	µg/L	7.2	ND
Methyl bromide	µg/L	10.	ND
Methyl chloride	µg/L	10.	ND
Methylene chloride	µg/L	2.8	7.99

MDL = Minimum Detection Limits

ND = None Detected

Table A-2 Priority Pollutants (continued)

Description	Unit	MDL	Sampled 27-JAN-93 Well Water
1,1,2,2-Tetrachloroethane	µg/L	6.9	ND
Tetrachloroethylene	µg/L	4.1	ND
Toluene	µg/L	6.0	ND
1,2-Trans-dichloroethylene	µg/L	1.6	ND
1,1,1-Trichloroethane	µg/L	3.8	ND
1,1,2-Trichloroethane	µg/L	5.0	ND
Trichloroethylene	µg/L	1.9	ND
Trichlorofluoromethane	µg/L	10.	ND
Vinyl chloride	µg/L	10.	ND
trans-1,3-Dichloropropylene	µg/L	10.	ND

Metals, Cyanides, Phenols

Description	Unit	MDL	Sampled 27-JAN-93 Well Water
Antimony	µg/L	60.	ND
Arsenic	µg/L	10.	BMDL
Beryllium	µg/L	1.0	ND
Cadmium	µg/L	2.0	ND
Chromium	µg/L	10.	ND
Copper	µg/L	10.	ND
Lead	µg/L	5.0	ND
Mercury	µg/L	0.20	BMDL
Nickel	µg/L	20.	ND
Selenium	µg/L	10.0	ND
Silver	µg/L	10.	ND
Thallium	µg/L	10.	ND
Zinc	µg/L	20.	ND
Cyanide, Total	mg/L	0.025	<.025
Phenolics, Total	mg/L	0.050	<.050

Pesticides

Description	Unit	MDL	Sampled 27-JAN-93 Well Water
Carbophenothion	µg/L	10.	ND
Thionazin	µg/L	1.0	ND
Dimethoate	µg/L	2.5	ND
Disulfoton	µg/L	0.51	ND
Methyl parathion	µg/L	1.0	ND
Parathion	µg/L	1.0	ND
Phorate	µg/L	2.5	ND
Famphur	µg/L	10.	ND
Tetraethylpyrophosphate	µg/L	2.5	ND

BMDL = Below Minimum Detection Limits MDL = Minimum Detection Limits
 ND = None Detected

Table A-2 Priority Pollutants (continued)

Herbicides			
Description	Unit	MDL	Sampled 27-JAN-93 Well Water
2,4-D	µg/L	3.6	ND
2,4,5-TP (Silvex)	µg/L	0.71	ND

Miscellaneous Analyses			
Description	Unit	MDL	Sampled 27-JAN-93 Well Water
Ammonia as N	mg/L	.05	.07
Ammonia Unionized	% of total		0.914
Total Suspended Solids	mg/L	4.	<4
Residual Chlorine	mg/L	0.1	< .1

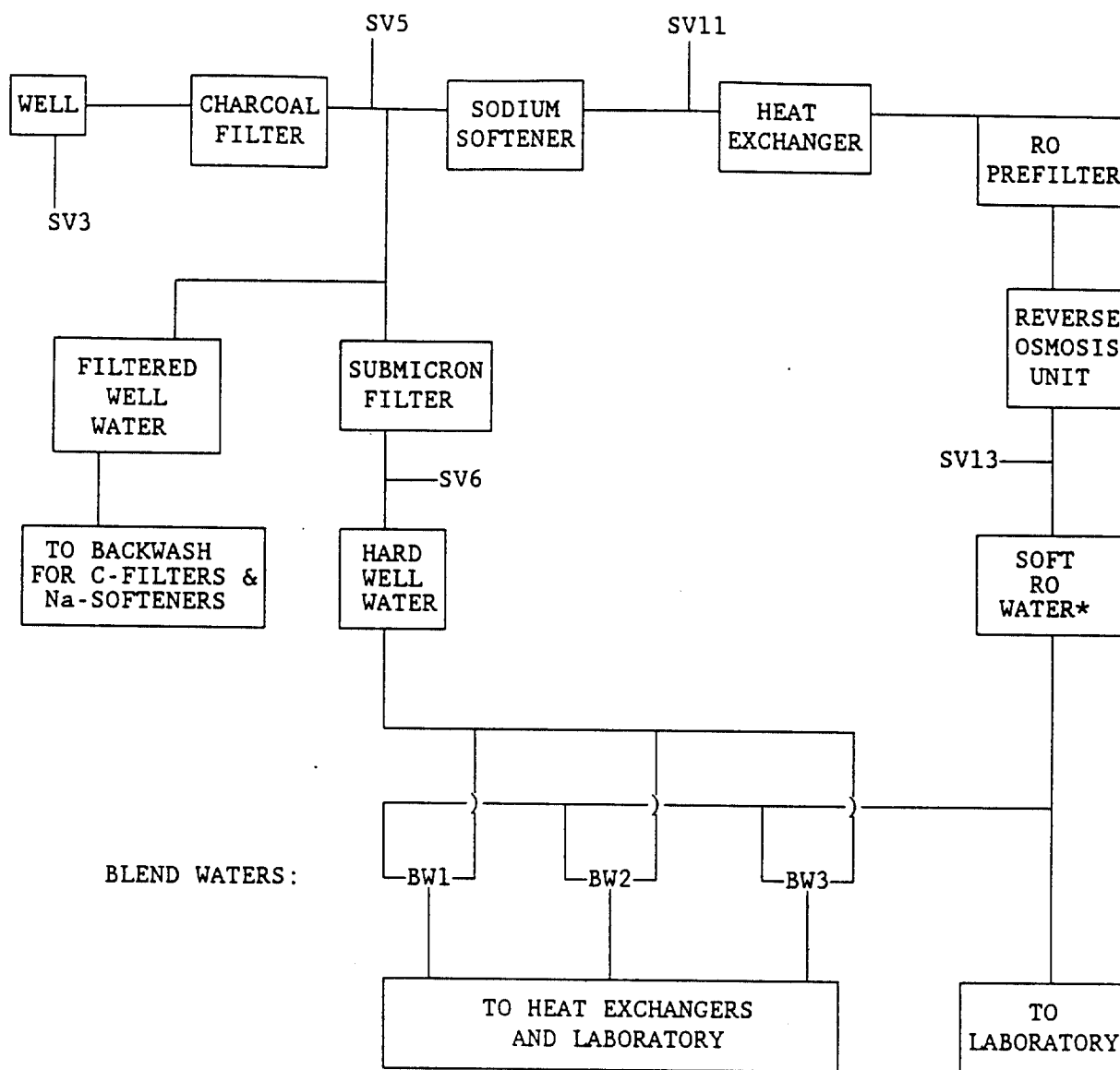
Annual Analyses			
Description	Unit	MDL	Reverse Osmosis Water
Standard Plate Count ^{A1}	col/mL	1.	<1.0
Water Suitability Test ^{A1} (Microbacterial Properties)		(Standard) 0.8-3.0	(Ratio "A") 1.19

MDL = Minimum Detection Limits

ND = None Detected

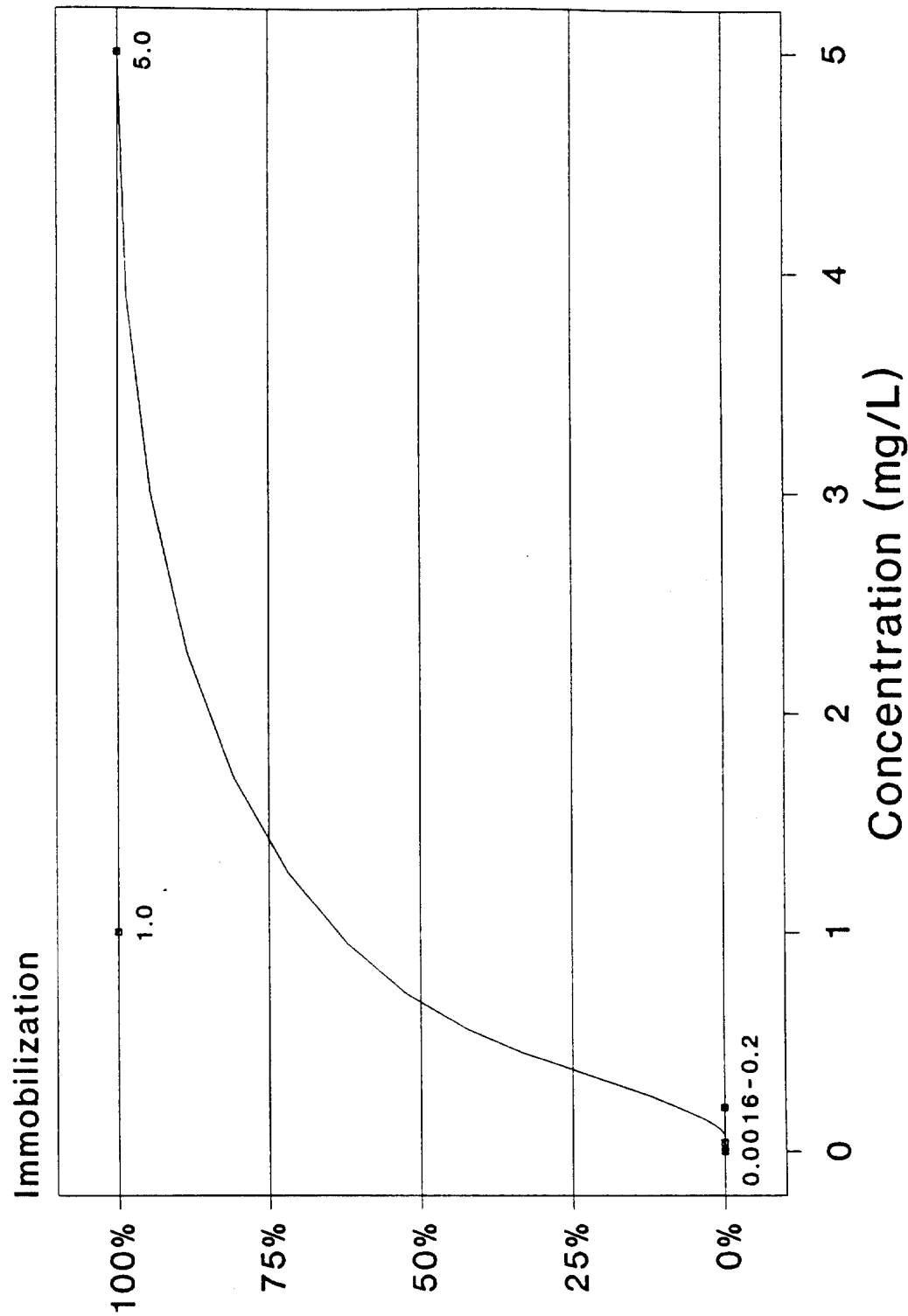
A1. performed on SV13 (Reverse Osmosis water); sampled 27-Jan-93

Figure A-1 Environmental Toxicology Laboratory Water System



* SOFTENED WATER OF ZERO HARDNESS

Figure 1 Concentration-Response Curve



48 Hour



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PESTICIDES AND TOXIC
SUBSTANCES

H. Michael D. Utidjian, M.D.
Corporate Medical Director
American Cyanamid Company
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Wayne, New Jersey 07470

FEB 22 1994

This letter formally acknowledges EPA's receipt of information submitted by your organization under Section 8(e), the "substantial risk" information reporting provision of the Toxic Substances Control Act (TSCA). For your reference, copies of the first page(s) of your submission(s) are enclosed and display the TSCA Section 8(e) Document Control Number (i.e., 8EHQ-0000-0000 Init.) assigned by EPA to your submission(s). Please refer to this cited number when submitting follow-up or supplemental information.

Please note that all submitted correspondence will be placed in the public files unless confidentiality is claimed according to the procedures outlined in Part X of EPA's TSCA Section 8(e) policy statement (43 FR 11110, March 16, 1978).

Confidential submissions submitted pursuant to the TSCA Section 8(e) Compliance Audit Program (CAP) should already contain information supporting confidentiality claims, because substantiation of CBI claims is required at the same time the 8(e) CAP is submitted to EPA. (If not done so already, please ensure that this information is provided to the Agency). When substantiating any/all claims, answer the questions detailed in the following attachment.

For NON-CAP submissions, any confidentiality claims should be supported by submission of information as described in the attachment(s).

12747 A



CERCA TRIAGE TRACKING DBASE ENTRY FORM

CERCA'S DATA: Submission # 8E1Q-1193-12747 SEQ A

TYPE: INT SUPP FLWP

SUBMITTER NAME: American Cyanamid Company

INFORMATION REQUESTED: FLWP DATE:
 0501 NO INFO REQUESTED
 0502 INFO REQUESTED (TECH)
 0503 INFO REQUESTED (VOL ACTIONS)
 0504 INFO REQUESTED (REPORTING RATIONALE)
 DISPOSITION:
 0639 REFER TO CHEMICAL SCREENING
 0678 CAP NOTICE

ADDITIONAL ACTIONS:

- 0401 NO ACTION REPORTED
- 0402 STUDIES PLANNED/UNDERWAY
- 0403 NOTIFICATION OF WORKERS/OTHERS
- 0404 LABEL/MSDS CHANGES
- 0405 PROCESS/HANDLING CHANGES
- 0406 APP/USE DISCONTINUED
- 0407 PRODUCTION DISCONTINUED
- 0408 CONFIDENTIAL

SUB DATE: 11/03/93 OTS DATE: 11/04/93 CSRAD DATE: 11/23/93

CHEMICAL NAME:

CAS#

7732185
42751-79-1

ADP

INFORMATION TYPE:

P F C

INFORMATION TYPE:

P F C

INFORMATION TYPE:

P F C

0201	ONCO (HUMAN)	01 02 04	0216	EPICLIN	01 02 04	0241	IMMUNO (ANIMAL)	01 02 04
0202	ONCO (ANIMAL)	01 02 04	0217	HUMAN EXPOS (PROD CONTAM)	01 02 04	0242	IMMUNO (HUMAN)	01 02 04
0203	CLT TRANS (IN VITRO)	01 02 04	0218	HUMAN EXPOS (ACCIDENTAL)	01 02 04	0243	CHEM/PHYS PROP	01 02 04
0204	MUTA (IN VITRO)	01 02 04	0219	HUMAN EXPOS (MONITORING)	01 02 04	0244	CLASTO (IN VITRO)	01 02 04
0205	MUTA (IN VIVO)	01 02 04	0220	ECO/AQUA TOX	01 02 04	0245	CLASTO (ANIMAL)	01 02 04
0206	REPRO/TERATO (HUMAN)	01 02 04	0221	ENV. OCCUREL/FATE	01 02 04	0246	CLASTO (HUMAN)	01 02 04
0207	REPRO/TERATO (ANIMAL)	01 02 04	0222	EMER INCI OF ENV CONTAM	01 02 04	0247	DNA DAM/REPAIR	01 02 04
0208	NEURO (HUMAN)	01 02 04	0223	RESPONSE REQUEST DELAY	01 02 04	0248	PROD/USE/PROC	01 02 04
0209	NEURO (ANIMAL)	01 02 04	0224	PROD/COMP/CHEM ID	01 02 04	0251	MSDS	01 02 04
0210	ACUTE TOX. (HUMAN)	01 02 04	0225	REPORTING RATIONALE	01 02 04	0299	OTHER	01 02 04
0211	CHIR. TOX. (HUMAN)	01 02 04	0226	CONFIDENTIAL	01 02 04			
0212	ACUTE TOX. (ANIMAL)	01 02 04	0227	ALLERG (HUMAN)	01 02 04			
0213	SUB ACUTE TOX (ANIMAL)	01 02 04	0228	ALLERG (ANIMAL)	01 02 04			
0214	SUB CHRONIC TOX (ANIMAL)	01 02 04	0239	METAB/PHARMACO (ANIMAL)	01 02 04			
0215	CHRONIC TOX (ANIMAL)	01 02 04	0240	METAB/PHARMACO (HUMAN)	01 02 04			

TRIAGE DATA: NON-CBI INVENTORY

YES (CONTINUE)

NO (DROP)

IN FLAMME

ONGOING REVIEW

YES (DROP/PREFER)

NO (CONTINUE)

REFUSE

SPECIES

Daphnia

Magna

TOXICOLOGICAL CONCERN:

LOW

MED

HIGH

USE:

Commercial

Cationic polymer mixture

COMMENTS

12747